

Part ii. deals with the methods and results of quantitative biological research. The author discusses fully the classical experiments of Hensen and Lohmann on the quantitative estimation of the plankton, giving the defects and limitations of these methods without bias. The last two chapters in this section are headed "A Census of the Sea" and "The Productivity of the Sea"; in them an attempt is made to view questions of economic value from a quantitative biological standpoint. That the estimation of the number of marketable marine fishes on a given fishing area, or calculations as to its yield per acre per annum, must as yet be purely speculative is fully appreciated. This, however, does not detract from the great value of these deductions, the interest in figures such as these lying more in the possibilities they suggest than in their mathematical correctness. The system of "trial and error" enters so largely into scientific investigation that perfection cannot be hoped to be attained without the aid of some such provisional results.

Part iii., under the title "Metabolism in the Sea," is, perhaps, the main feature of the book. The researches of Pütter on the nutrition of marine organisms, and those of Brandt on the "Law of the Minimum," are treated at length. A chapter is devoted to marine bacteria, and emphasis is laid on the possibility that nitrogen is the determining factor in the sea, and the denitrifying bacteria the cause of the observed scarcity of nitrates and nitrites in tropical and subtropical waters. The extraordinary abundance of planktonic life in the Arctic seas has given rise to much discussion, but in our present state of knowledge this phenomenon can be best explained by the hypothesis that, owing to the inhibition of bacterial activity at low temperatures, there is no diminution from this cause in the supply of the nitrogenous food-stuffs that can be utilised by the marine protophyta. The constituents of sea-water such as nitrates, phosphates, silica, &c., are present in such minute traces that quantitative determination is extremely difficult. The author might have laid greater stress on this point, since no really satisfactory methods of analysis have yet been perfected.

References to literature, a most important point in a work of this kind, are given freely throughout the text, a bibliography of the more fundamental memoirs being also included as an appendix. Authors and subjects are indexed separately, so that references can be most easily found.

Besides a few obvious misprints we note the following:—P. 67, line 2, oviparous for viviparous in reference to *Acanthias*, the spur-dog; p. 96 (in the diagram), *Aurelia*, *Rhizosolenia*, should read *Aurelia*, *Rhizostoma*; and p. 193, line 1, agriculture for aquiculture.

The illustrations are mostly quite diagrammatic, and as such serve their purpose, but in some cases (pp. 68, 79) clearness is sacrificed by representing plankton animals lying across one another. The printing, binding, &c., are uniform with the well-known "Cambridge Biological Series," to which this work is a welcome addition.

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ANATOMY OF THE HORSE.

The Surgical Anatomy of the Horse. Part iii. By J. T. Share-Jones. Pp. x+220. (London: Williams and Norgate, 1908.) Price 15s. net.

THE third of the four volumes which are to form a "Surgical Anatomy of the Horse" deals with the hind limb, and will doubtless fulfil the author's hope that it may be "at least as acceptable as the preceding volume both to students and practitioners in the study and practice of the important branch of veterinary work to which it relates." The present volume has all the merits of its predecessors. Of its value as a means by which the practitioner may refresh his memory of the anatomy of the regions with which he is concerned surgically there can be little question. In some places the anatomical descriptions are both long and detailed, and contain all the information which is in any way important. At the same time, the present part of the work is not without some of the defects exhibited in those sections of the work which have already been noticed in these columns.

One matter which the author would be well advised to ponder, in view of the possible demand for a subsequent edition, is that of having all the figures drawn from either the right or the left limb. It does not make for ease of comprehension to find that neighbouring plates illustrate the one the right the other the left limb. Comparison would be a much simpler matter if all the figures represented the same side of the body. It is bad enough when different plates do not correspond, but it is exasperating when the same plate contains figures some of the right and some of the left limb. In Plate xviii., Fig. A shows the superficial markings of the *left* hock, Fig. B illustrates the arrangement of the ligaments from the same aspect of the *right* hock, and Fig. C depicts the disposition of the bones on the medial side of the *left* hock. It may be remarked in passing that Figs. B and C of Plate xx. are not of the *left* hock. Plates xxiv. and xxv. both illustrate the seat of anterior tibial neurectomy, but one figure is drawn from the left limb, the other from the right.

While recognising the enormous importance of the tarsus as a surgical region, we are not prepared to admit that it is necessary to have seven figures to illustrate the position of the various bones, nor are we prepared to allow that the grooves and ridges on the medial side of the tarsus are of such surpassing significance as to merit so much attention. Their importance from the clinical aspect is open to question, and, from the anatomical side, it is clearly recognised that the degree of their variation is great.

Mr. Share-Jones again makes use of a nomenclature in the defence of which there is little to be said. So long, however, as his readers understand what is meant, exception can be taken to the terms employed on academic grounds only. At the same time, it seems a pity that adjectives like "external lateral" and "internal lateral" should not be omitted, if only on the grounds of the desirability of brevity.

To apply the term "sciatic" to the internal

popliteal nerve (n. tibialis) until it arrives on a level with the heads of the gastrocnemius muscle is not justified by common usage among anatomists. An error, in the commission of which the author is not alone, is in the spelling "tendo-Achilles."

The judicious use of quotations is to be commended, but Mr. Share-Jones is not well advised in the insertion of too long quotations. We feel that the work would have lost nothing in clearness, and would have gained something in terseness, had the quotations been condensed into a few lines or omitted altogether. There seems little point, for example, in the views of Percival on "ossific diathesis," quoted by W. Williams and re-quoted by our author.

The fact that the author treats his subject so largely from the surgical side leads one to examine the surgical paragraphs with even more care than those which are purely anatomical. Surgery certainly is an art, and not one of the exact sciences, and, therefore, affords great scope for difference of opinion. Mr. Share-Jones, consequently, is entitled to express whatever views he may happen to hold, but he need not be surprised if his readers occasionally disagree with him. It may be doubted, for instance, if it is possible in cases of so-called deferred fracture of the tibia to detect the line of fissure by palpation. It is a matter of opinion whether crepitus can be elicited by manipulation in fractures through the acetabulum. There are those who would say that crepitation can be best produced by movements by the horse himself.

The professional reader, moreover, may inquire why epiphyseal fractures of the femur of young animals are omitted, or, in fracture of the femur, how the bony fragments are to be retained in position, or what may be the value of periosteotomy in "spavin," and how it is done. On many other points, it is safe to say, the practitioner will feel irritated at paucity of information, or will dissent, sometimes strongly, from the views expressed.

From what has been said it is clear that the present part of the "Surgical Anatomy of the Horse" is not without blemish to detract from its numerous merits.

GLASS DECORATION.

Decorative Glass Processes. By A. L. Duthie. Pp. xii+267. (London: A. Constable and Co., Ltd., 1908.) Price 6s. net.

THE book before us contains a minutely detailed account of a number of processes employed for the purpose of producing architectural decorative work in glass. Beginning with an account of the various kinds of glass available for such work, and indulging in a retrospect of glass-working that takes the reader back to ancient Egypt, Mr. Duthie describes the production of leaded lights, the technique of glass painting and staining, and the various processes which depend upon the partial obscuring of the glass by means of fluorides or by the action of the sand-blast. Finally gilding, silvering, mosaic, and a number of special processes are described.

Mr. Duthie's account of the varieties of glass avail-

able for decorative work is interesting especially as regards the production of "antique" glass with its intentional "imperfections," such as bubbles, striæ and partial devitrifications. On the other hand, the statement that polished plate glass is made by polishing "rough cast plate" serves to indicate that the author is not intimately acquainted with this side of glass manufacture.

In his detailed account of the technique of the various crafts concerned in the production of decorative glass, Mr. Duthie is, perhaps, somewhat uninteresting to the general reader—the descriptions are too minutely detailed and given in rule-of-thumb manner—while for the practical worker the book may serve as a useful reference for recipes not in constant use, but would scarcely be adequate for the needs of a learner. A larger amount of space devoted to the principles of the technique, even at the expense of some of the detailed directions, would have been preferable. Ideas and principles are, however, only introduced in reference to the questions of art involved in the designs for various types of work. This is, perhaps, scarcely the place to discuss these questions, but the fine illustrations with which the author's views are exemplified deserve special comment. Some of these, such as Fig. 15 (leaded panel), Fig. 31 (triple embossing), and Fig. 38 (electro-copper glazing), are particularly fine; the latter is also of special interest technically, as it illustrates a very successful application of an electro-deposition process to glass work. In this work the lead flanges or "calms" are replaced by thin strips of copper laid between the different pieces of coloured glass; upon the projecting edges of these bands ledges of copper are electro-deposited, flanges being thus formed which grip the glass and consolidate the whole panel.

Scientific readers will be particularly interested in the manner in which the action of hydrofluoric acid and of soluble fluorides is utilised for the production of glass surfaces of various degrees of opacity, ranging from the "dead white" of the pure fluoride to the practically clear glass left by the pure acid. As Mr. Duthie remarks, however, it is certainly surprising to find this etching process known by the trade term "embossing," a term which rather suggests the products of the pressed-glass factory. The glass industry is, apparently, the victim of a very curious system of nomenclature; thus the term "metal" is always applied to glass, while such curious terms as "ambitty" (spelt "anbitty" in some places in the book), "larrykin" and "cullett" are found in a short glossary at the end of this book. To the words named in that list Mr. Duthie should, however, have added another, which he employs, apparently, without being conscious of anything unusual—he refers to the process of etching away layers of glass as "aciding" the glass and this can hardly be regarded as a welcome or even a legitimate addition to the language. Similarly, the continual loose reference to hydrofluoric acid as "fluoric acid" is not to be commended, although no doubt widely incorporated in workshop slang.

In spite of these criticisms, and some further